

**AUTOMATIC TEST PATTERN GENERATION FOR FUNCTIONAL REGISTER
TRANSFER LEVEL CIRCUITS USING ASSIGNMENT DECISION DIAGRAMS**

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ABSTRACT

Test patterns are generated by generating assignment
decision diagrams that represent a register transfer level
10 digital circuit. A nine-valued symbolic algebra is used in which
objectives are determined for portions identified in the
assignment decision diagram. The objectives are justified and
propagated by traversing the assignment decision diagram in which
a test environment is found. Heuristics are used if a test
15 environment is not initially found. Using the test environment
found, predetermined test vectors are propagated to obtain a
system-level test set. Each test set for each portion are
concatenated to obtain a complete test set for the register
transfer level digital circuit.

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